DECLARATION UNDER 37 CFR § 1.131

Paul F. Ranken, hereby declares as follows:

1. I am one of the applicants in the above-identified application.

2. I am a chemist. In 1971 I received the degree of PhD. in chemistry from the University of Florida.

3. Since July, 1973, I have been employed as a chemist by Albemarle Corporation and the predecessor thereof, Ethyl Corporation, at the research laboratory facilities in Baton Rouge, Louisiana. My present position is that of Sr. R&D Advisor.

4. Prior to July 25, 2003, I conducted, in the United States at the Albemarle Technical Center in Baton Rouge, Louisiana, the test work described herein.

5. In particular, prior to July 2003, I prepared a solution of 8g DICY (dicyandiamide) and 0.52g 2-MI (2-methylimidazole) in 72g DMF (dimethylformamide). This solution was combined with 320g of Dow XZ 92528 bromine-free, phosphorous advanced epoxy resin. 2.6 g BYK LP W20037 and 130g of Martinswerk 385955 boehmite was then added. Finally, 50g of acetone were added. The resultant addition product was mixed well with a Silverson mixer for 30 minutes at 6,000 rpm. The resultant mix was then coated onto 13 12x12 inch fiberglass cloths. The coated cloths were supported on wooden strips and were heated at 170°C for 3.5 minutes. Each fiberglass cloth was weighed before coating and after coating and the heat treatment. The fiberglass cloths each weighed about 19.4g. The weights of each coated cloth after the heat treatment were recorded on page 144 of my Laboratory Notebook # 8921(copy attached and marked as Exhibit A). Also recorded on page 144 for each coated and heat treated cloth was the wt% that was attributable to the heat treated coating. Each of the coated and heat treated cloths were trimmed to remove cloth that had not been coated or only partially coated. These trimmed areas of the cloth were in the area of the cloth that was supported by the wooden strips.

6. Also, prior to July 25, 2003, I produced a 4-ply laminate and an 8-ply laminate from the coated, heat treated and trimmed cloths. I used cloths numbered 5, 6, 7 and 8 to produce the 4-ply laminate and cloths numbered 1, 2, 3, 4, 9, 10, 11 and 12 to produce the 8-ply laminate. Both laminates were pressed under a pressure of 21,000 psi and heated at a temperature of 170°C for 1 hour. The laminates were observed and found to have an acceptable appearance and to have experienced some flow. The latter is considered beneficial since this flow acts to coat the edges of the cloths during the lamination process.

7. DICY was used as a curative for epoxy resins. 2-MI was used as a curative promoter. DMF was used as a solvent. BYK LP W20037 was used as a wetting and dispersant additive. XZ 92528 was a bromine-free epoxy resin that had been advanced with 3% phosphorous. The phosphorous compound used to advance the resin was DOPO (10-hydroxy-9,10-dihydro-9-oxa-10-phosphaphenanthrene-10-oxide). DOPO is a well known and commercially available material. The Martinswerk boehmite, #385955, was a fine ground boehmite of the type marketed

by Martinswerk as Martoxal BN-2, with an average particle size of 1.66 microns, a d_{10} of 0.32 microns, a d_{50} of 1.42 microns and a d_{90} of 3.14 microns. Martoxal BN-2 has an average particle size of about 1.44 microns, a d_{10} of about 0.52 microns, a d_{50} of about 1.44 microns, a d_{90} of about 3.70 microns, a specific surface (BET) of 15 ±5 m^2/g and a bulk density of 700 ±100 kg/m^3.

8. The experimental work referred to in paragraphs 5 and 6 was contemporaneously recorded on page number 144 of Laboratory Notebook # 8921, a copy of which page is attached hereto and marked for identification as Exhibit A. Exhibit A corresponds to the original notebook page except that all dates have been redacted therefrom.

9. The experimental work referred to in paragraphs 5 and 6 above show a formulation containing epoxy resin advanced with phosphorus and finely –divided boehmite and its production. The formulation is demonstrated to be suitable in the formation of laminates produced from substrates coated with the formulation. This work evidences the making of these inventions in the United States prior to July 25, 2003, the filing date of Mishima et al, U.S. Pat. No. 7,056,585.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and such willful false statements may jeopardize the validity of the above identified patent application and any patent issuing therefrom.

Paul F. Ranken

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Date: November 11, 2008

SUBJECT

PROJECT NO.

BOOK No 8521

Work continued from Page

Preparation of 4-ply and 8-ply laminates from Dow XZ 92528.00 Experimental Epoxy Resin containing boehmite

Prepare solution of 8g DICY and 0.52g 2-MI in 72g DMF. Combine with 320g Dow resin and 2.6g BYK LP W20037. Add 130g Martinswerk boehmite, # 385955 Add 50g acetone
Mix well with Silverson mixer for 30 minutes at 6000 rpm.
Coat ~~13~~ thirteen 12×12 fiberglass cloths.
B-stage 3.5 minutes at 170°C.

① 34.8 − 19.4 = 15.4 = 44%
② 35.9 − 19.4 = 16.5 = 46.0
③ 35.7 − 19.4 = 16.3 = 45.7%
④ 36.7 − 19.4 = 17.3 = 47.1

⑤ 36.9 − 19.4 = 17.5 = 47.4
⑥ 36.4 − 19.4 = 17.0 = 46.7
⑦ 36.9 − 19.4 = 17.5 = 47.4
⑧ 36.1 − 19.4 = 16.7 = 46.3

⑨ 36.4 − 19.4 = 17.0 = 46.7
⑩ 37.8 − 19.4 = 18.4 = 48.7
⑪ 37.5 − 19.4 = 18.1 = 48.3
⑫ 39.7 − 19.4 = 51.1
⑬ 39.1 − 19.4 = 19.7 = 50.4

trim and combine 5,6,7,8 = (49.8, 49.1, 50.8, 50.3 = 50.0 mean)
trim and combine 1,2,3,4,9,10,11,12 = (44.4, 52.6, 51.5, 51.8, 48.8, 48.8, 50.5, 49.0 = 49.9% mean)

Press at 170°C / 21000 psi for 1 hr.
Look decent. Some flow:

Work continued on Page

SIGNATURE Paul F. Ranken

DATE

READ AND UNDERSTOOD BY C. H. Kolich

DATE

WITNESS

DATE

EXHIBIT A